

WHAT IS CLAIMED IS:

CLAIMS

1. A wireless device operable to communicate with first and second wireless communication networks of different radio access technologies, comprising:

a first modem processor operative to perform processing for a pending call with the first wireless network, receive a first message from the first wireless network to perform handoff to the second wireless network, and provide notification of the handoff; and

a second modem processor operative to exchange a second message with the second wireless network to establish a new call with the second wireless network, perform a call setup procedure with the second wireless network to establish the new call, and perform processing for the new call with the second wireless network.

2. The wireless device of claim 1, further comprising:

an application processor operative to receive the notification from the first modem processor, direct the second modem processor to establish the new call, and direct the first modem processor to release the pending call.

3. The wireless device of claim 2, wherein the application processor is operative to direct the first modem processor to release the pending call concurrently with the establishment of the new call or shortly after the new call has been established to minimize disruption of service.

4. The wireless device of claim 1, wherein the first wireless network implements Wideband Code Division Multiple Access (W-CDMA) and the second wireless network implements IS-2000.

5. The wireless device of claim 4, wherein the second modem processor is operative to perform a mobile terminated (MT) call setup procedure defined by IS-2000, and wherein the second message is a *General Page Message* sent by the second wireless network.

6. The wireless device of claim 4, wherein the second modem processor is operative to perform a mobile originated (MO) call setup procedure defined by IS-2000, and wherein the second message is an *Origination Message* sent to the second wireless network.

7. The wireless device of claim 1, wherein the pending and new calls are voice calls.

8. The wireless device of claim 1, wherein the first modem processor is operative to maintain a first protocol stack for communication with the first wireless network and the second modem processor is operative to maintain a second protocol stack for communication with the second wireless network.

9. The wireless device of claim 1, wherein the second modem processor is operative to perform pilot re-acquisition and cell search, as necessary, obtain updated system information, and perform system access for the second wireless network to establish the new call.

10. The wireless device of claim 1 and operable to communicate with the first and second wireless networks simultaneously.

11. The wireless device of claim 1, wherein the handoff is triggered by the first wireless network based on measurements obtained by the wireless device.

12. The wireless device of claim 1, wherein the handoff is triggered by the first wireless network based on location information for the wireless device.

13. A method of performing a handoff between first and second wireless communication networks of different radio access technologies, comprising:

processing a pending call with the first wireless network;
receiving a first message from the first wireless network to perform a handoff to the second wireless network;

exchanging a second message with the second wireless network to establish a new call with the second wireless network;

performing a call setup procedure with the second wireless network to establish the new call; and

processing the new call with the second wireless network, and

wherein the processing a pending call and the receiving a first message are performed by a first modem processor, and wherein the exchanging a second message, performing a call setup procedure, and processing the new call are performed by a second modem processor.

14. The method of claim 13, wherein the first wireless network implements Wideband Code Division Multiple Access (W-CDMA) and the second wireless network implements IS-2000.

15. An apparatus operable to perform a handoff between first and second wireless communication networks of different radio access technologies, comprising:

means for processing a pending call with the first wireless network;

means for receiving a first message from the first wireless network to perform a handoff to the second wireless network;

means for exchanging a second message with the second wireless network to establish a new call with the second wireless network;

means for performing a call setup procedure with the second wireless network to establish the new call; and

means for processing the new call with the second wireless network, and

wherein the means for processing a pending call and the means for receiving a first message are independent of the means for exchanging a second message, the means for performing a call setup procedure, and the means for processing the new call.

16. The apparatus of claim 15, wherein the first wireless network implements Wideband Code Division Multiple Access (W-CDMA) and the second wireless network implements IS-2000.

17. A UMTS (Universal Mobile Telecommunications System) Terrestrial Radio Access Network (UTRAN) comprising:

- means for processing a pending call with a wireless device;
- means for sending a first message to the wireless device to perform a handoff to a cdma2000 radio access network (RAN);
- means for sending a second message to a UMTS mobile switching center (MSC) to request relocation of the wireless device to another MSC in the cdma2000 RAN;
- means for receiving an indication of a new call established for the wireless device with the cdma2000 RAN; and
- means for terminating the pending call with the wireless device.

18. A wireless device operable to communicate with first and second wireless communication networks of different radio access technologies, comprising:

- a first modem processor operative to perform processing for a pending call with the first wireless network, receive a first message from the first wireless network to perform a handoff to the second wireless network, and provide notification of the handoff;
- a second modem processor operative to establish traffic channels with the second wireless network and perform processing for a new call with the second wireless network; and
- an application processor operative to receive the notification from the first modem processor and direct the second modem processor to establish the traffic channels and process the new call with the second wireless network.

19. The wireless device of claim 18, wherein the first wireless network implements Wideband Code Division Multiple Access (W-CDMA) and the second wireless network implements IS-2000.

20. The wireless device of claim 18,
wherein the first modem processor is further operative to receive from the first wireless network a second message carrying a list of frequencies to search for cells in the second wireless network, and to send to the first wireless network a third message carrying search results for the list of frequencies, and

wherein the second modem processor is further operative to perform pilot acquisition and cell search for the list of frequencies and to provide the search results.

21. The wireless device of claim 18, wherein the first message from the first wireless network includes information for one or more target cells in the second wireless network to which the wireless device is handed off.

22. The wireless device of claim 21, wherein the one or more target cells are determined by the first wireless network based on search results from the second modem processor for a list of frequencies in the second wireless network.

23. The wireless device of claim 18, wherein the second modem processor is further operative to send a second message to the second wireless network indicating successful completion of the handoff to the second wireless network.

24. The wireless device of claim 18, wherein the first modem processor is operative to autonomously terminate the pending call with the first wireless network after providing the notification of the handoff.

25. The wireless device of claim 18, wherein the application processor is further operative to direct the first modem processor to terminate the pending call with the first wireless network.

26. The wireless device of claim 18, wherein the first wireless network terminates the pending call based on signaling between the first and second wireless networks.

27. A method of performing a handoff between first and second wireless communication networks of different radio access technologies, comprising:

processing a pending call with the first wireless network;

receiving a first message from the first wireless network to perform a handoff to the second wireless network;

establishing traffic channels with the second wireless network; and

processing a new call with the second wireless network, and
wherein the processing a pending call and the receiving a first message are
performed by a first modem processor, and wherein the establishing traffic channels and
the processing a new call are performed by a second modem processor.

28. The method of claim 27, wherein the first wireless network implements
Wideband Code Division Multiple Access (W-CDMA) and the second wireless network
implements IS-2000.

29. An apparatus operable to perform a handoff between first and second
wireless communication networks of different radio access technologies, comprising:
means for processing a pending call with the first wireless network;
means for receiving a first message from the first wireless network to perform a
handoff to the second wireless network;
means for establishing traffic channels with the second wireless network; and
means for processing a new call with the second wireless network, and
wherein the means for processing a pending call and the means for receiving a
first message are independent of the means for establishing traffic channels and the
means for processing a new call.